VOLUME 3. AIR OPERATOR TECHNICAL ADMINISTRATION

CHAPTER 7. AVIATION WEATHER INFORMATION SYSTEMS

SECTION 1. GENERAL BACKGROUND INFORMATION

1401. GENERAL.

A. This chapter provides the following information:

- Assistance to aviation safety inspectors who approve or accept methods which certificate holders may use to collect, evaluate, and disseminate weather information
- Specific instructions for inspectors evaluating weather information systems
- Information to assist inspectors in completing routine job assignments associated with Part 121 and Part 135 weather information systems (along with other references in this handbook)
- Information about selected types of certificate holders with special needs

B. It is not intended that this chapter provide a detailed explanation of meteorology or aviation weather reporting and forecasting methods. Inspectors who evaluate weather information systems should already have a sound understanding of meteorology, including weather reporting and forecasting requirements.

C. Section 4 of this chapter introduces the concept of an Enhanced Weather Information System (EWINS). These systems and the professional qualifications of the aviation meteorologists and dispatchers who are used in the operation of an EWINS, are described in the definitions paragraph of this section and section 4.

1403. BACKGROUND DISCUSSION.

A. Weather information required for a specific aeronautical operation is primarily determined by operational needs and the operating environment. Some significant meteorological information may not apply to every flight operation. Basic weather information, however, is applicable to a pilot planning a short range, VFR, air taxi flight as well as to an airline captain planning a transcontinental flight.

B. Pilots need to know weather conditions expected at the departure point, en route, and at the destination when determining the safest operating scenario for the flight. To obtain the necessary weather information, a variety of sources exist. An air taxi pilot may obtain this information from a government operated source, such as a flight service station (a system specifically designed for use by the entire aviation community). Pilots and dispatchers of more complex air carriers may depend entirely on a public aviation weather information system as well. Depending on the extent and complexity of their operation, air carriers may also choose to use existing public aviation weather information systems as sources for their own aviation weather information systems. They may use a public system simultaneously with privately operated sources. Certificate holders may choose to provide their own weather information system or to contract with a private enterprise for weather information. Regardless of the weather sources used, a weather information system must provide all operationally necessary meteorological information for each phase of flight and ground operations and all meteorological information required by 14 CFR.

1405. AERONAUTICAL WEATHER DATA. Aeronautical weather data is meteorological information used to plan and control Part 121 and Part 135 flight and ground operations. This data includes information such as the following:

- Surface aviation weather reports
- Pilot reports
- Radar reports
- Satellite pictures
- Aviation weather forecasts
- Tropopause height and temperature
- Severe weather outlook charts
- Weather depiction charts
- Radar summary charts
- Surface analysis charts
- Significant weather prognostic charts

1407. POLICY ON CONDITIONAL PHRASES IN REMARKS PORTION OF WEATHER FORECAST.

A. Weather forecasts provided by the National Weather Service (NWS) and other sources often have conditional phrases such as "occasional," "intermittently," "chance of," or "tempo" in the remarks portions of the forecasts. These phrases supplement the main body of the forecast by indicating the probability of changing conditions during the forecast period. These modifying phrases, used in the remarks portion of a terminal forecast (FT), indicate the weather conditions for an area within 5 nautical miles of a runway complex. Certain regulations concerning the selection of destination and alternate airports require that "weather reports or forecasts, or any combination thereof, indicate that the weather conditions will be at or above..." the minimum weather conditions specified in those regulations. The FAA Office of Chief Counsel has consistently interpreted these regulations to mean that the worst weather condition in any of the reports or forecasts used to control a flight movement is the controlling factor. These interpretations make the remarks portion of a forecast as operationally significant as the main body of the forecast. Therefore, it is FAA policy that the worst weather condition in the main body or the remarks portion of a terminal forecast, as well as any weather report used, is the controlling factor when selecting a destination or alternate airport.

B. This policy must be applied when determining compliance with the following regulations:

- §121.613 - Dispatch or flight release under IFR or over the top
- §121.615 - Dispatch or flight release over water: Flag and supplemental air carriers and commercial operators
- §121.619 - Alternate airport for destination: IFR or over the top: Domestic air carriers
- §121.621 - Alternate airport for destination: Flag air carriers
- §121.623 - Alternate airport for destination; IFR or over the top: Supplemental air carriers and commercial operators
- §121.625 - Alternate airport weather minimums
- §135.219 - IFR: Destination airport weather minimums
- §135.223(b) - IFR: Alternate airport requirements
- § 91.169 - Flight plan; information required (IFR alternate airport weather minimums)

1409. POLICY FOR DETERMINING THE CONTINUED ADEQUACY OF WEATHER REPORTS AND OBSERVATIONS.

A. The purpose of regulations which establish weather minimums, or which require flightcrews and dispatchers to consider weather conditions, is to prevent unsafe flight operations. The phrases "current weather" and "latest weather report" have occasionally been interpreted inappropriately resulting in noncompliance with 14 CFR and in diminished safety inflight operations.

B. Because weather conditions can change rapidly, a continuing watch over weather conditions must be maintained wherever Part 121

or IFR Part 135 terminal operations are conducted. For surface weather observations to be considered "current," one of the following two conditions must be met:

(1) A specifically approved automated weather observation system must be fully operational while terminal area flight operations are conducted.

(2) An observer station of an appropriate type (listed in paragraph 1439 or 1441) must be fully operational and must maintain a basic weather watch as follows:

(a) For scheduled operations, a basic weather watch must begin in time to make an observation available to pilots and dispatchers at least 30 minutes before the estimated time of arrival or departure. The basic weather watch may not be discontinued until the arrival or departure is completed.

(b) For nonscheduled operations, the basic weather watch should begin at least 30 minutes before the estimated time of arrival or departure and must begin in time to provide pilots with an observation before beginning the approach or departure. The basic weather watch must not be discontinued until the arrival or departure is completed.

1411. SOURCES FOR TECHNICAL ASSISTANCE AND METEOROLOGICAL REFERENCES. When evaluating weather information systems, an inspector should not hesitate to contact local NWS facilities for technical assistance and expertise. An inspector who encounters situations which are not addressed in this handbook should contact AFS-400 for technical assistance.

A. Additional meteorological information can be found in the following selected references:

- Advisory Circular (AC) 00-6A, Aviation Weather
- AC 00-24, Thunderstorms
- AC 00-45C, Aviation Weather Services
- AC 00-50A, Low Level Windshear
- ICAO Document 8896-AN/893/2, Manual of Aeronautical Meteorological Practice
- FAA Windshear Training Aid, volumes 1 and 2

B. For information on obtaining aviation weather from the internet, see AC 00-62, Internet Communications of Aviation Weather and NOTAMs.

1413. DEFINITIONS, ACRONYMS, AND ICAO EQUIVALENT TERMS.

A. Definitions.

(1) Aviation Meteorologist. In this handbook, an aviation meteorologist is defined as a person who has earned a degree in meteorology from an accredited university or college, and who is certified by his employer as competent to perform aviation weather forecasting duties. A person without a degree but who has been qualified as a meteorological technician by the NWS, or as an aviation forecaster by a U.S. or NATO military authority, may also be designated as an aviation meteorologist. Aviation meteorologists used in an Enhanced Weather Information System (EWINS) may be authorized to make all aviation weather forecasts including flight movement forecasts (FMF, as defined in this paragraph) and forecasts of adverse weather phenomena.

(2) Dispatcher With FMF Authority. When used in this handbook, a dispatcher with FMF authority is a certificated dispatcher employed by a certificate holder, who is specifically trained and qualified in accordance with the criteria in this chapter. A dispatcher who meets this criteria may be authorized by the certificate holder to forecast aviation weather as part of his duties in an Enhanced Weather Information System (EWINS). This forecasting authority is limited to the preparation of specific flight movement forecasts. Secondly, a dispatcher meeting this criteria may also modify forecasts of adverse weather phenomena, provided the modification is limited to the effect the adverse weather phenomena will have on a specific flight movement.

FYI: A certificate holder may choose to use

other descriptive titles for properly trained and qualified aviation meteorologists or dispatchers with FMF authority.

(3) Part 121/135 Weather Information System. When used in this handbook, a weather information system is a system acceptable to the FAA for gathering and disseminating aeronautical meteorological data.

(4) Enhanced Weather Information System (EWINS). When used in this handbook, an Enhanced Weather Information System (EWINS) is defined as an FAA approved system for gathering, evaluating, and disseminating weather data with the authority to issue weather forecasts for control of flight movements. An EWINS must include the subsystems required for obtaining and disseminating reports and forecasts of adverse weather phenomena in a manner which complies with the requirements of section 121.101(d). Certificate holders who have an approved EWINS may authorize properly trained and qualified aviation meteorologists and dispatchers to issue flight movement forecasts. Based on the meteorological data acquired through an EWINS, aviation meteorologists may be authorized to issue, update, and/or modify general forecasts of routine or adverse weather phenomena. Based on the meteorological data acquired through an EWINS, a dispatcher with FMF authority may be authorized to modify forecasts of adverse weather phenomena as it effects a particular flight through a flight movement forecast. An EWINS approved for one Part 121 or Part 135 operator may be approved for use by other Part 121 and Part 135 operators in accordance with the criteria specified in section 4.

(5) Flight Movement Forecast (FMF). When used in this handbook, flight movement forecast (FMF) is defined as a forecast prepared and issued by an EWINS containing meteorological conditions expected during the departure, en route, and landing operations of a specific flight. It includes forecast weather conditions at alternate and diversionary airports, along routes, and at altitudes where the flight may operate. For operators approved to use an EWINS, flight movement forecasts are authoritative forecasts on which flight planning, dispatch, or release must be based to satisfy the requirements of 14 CFR.

(6) Adverse Weather Phenomena Reporting and Forecasting Subsystem. An Adverse Weather Phenomena Reporting and Forecasting Subsystem is part of a Part 121/135 weather information system, or an EWINS. This subsystem includes dedicated procedures to identify, forecast, and communicate information concerning weather phenomena which could diminish safety in aeronautical operations.

(7) Weather Report. When used in this handbook the term "weather report" means a report of meteorological conditions observed at a specific time and location. Examples include PIREPs, RAREPs and SAs.

(8) Qualified Internet Communications Provider (QICP). A QICP is a person or organization that provides access to aviation weather and NOTAMs via the Public Internet and has FAA-approved Internet communications practices for reliability, accessibility, and security (e.g., protection of data from unauthorized modification.), accomplishes and maintains a weather and NOTAM provider's facility that uses security practices to protect the data from unauthorized modification, and encourages the identification of the operational or experimental status of the QICP products.

B. Acronyms.

AC - Convective Outlook Bulletin (identifies a forecast of probable convective storms)

AIRMET - Airman's Meteorological Information (an inflight advisor forecast of possibly hazardous conditions including moderate icing or turbulence, sustained surface winds exceeding 30 knots, and widespread low ceilings)

ARTCC - Air Route Traffic Control Center (FAA)

CCFP - Collaborative Convective Forecast Product

CWA - Center Weather Advisory (inflight advisory of potentially hazardous conditions applicable to the control area of the center that issues the advisory, normally valid 1 - 2 hours)

CWSU - Center Weather Service Unit (NWS and FAA)

EFAS - En route Flight Advisory Service (Flight Watch, FAA)

FA - Area Forecast (identifies a forecast of aviation weather over a relatively large area)

FD - Winds and Temperatures Aloft Forecast (a forecast identifier)

FSS - Flight Service Station (FAA)

FT - Terminal Forecast (identifies a forecast in the U.S. forecast code)

GOES - Geostationary Operational Environmental Satellite

HIWAS - Hazardous Inflight Weather Advisory Service (FAA)

HPC - Hydrometeorological

ICAO - International Civil Aviation Organization

IFSS - International Flight Service Station (FAA)

LAWRS - Limited Aviation Weather Reporting Station (usually a control tower)

METAR/SPECI - Aviation Routine Weather Report/Aviation Selected Weather Report

NAWAU - National Aviation Weather Advisory Unit (NWS)

NCWF - National Convective Weather Forecast (NCWF helps (1) pilots avoid flying into hazardous areas and (2) dispatchers and traffic flow managers proactively plan to minimize schedule and flight disruptions. In the short term, the NCWF does not replace convective products such as Convective SIGMETs. See the Aeronautical Information Manual for details about the NCWF and how it is to be used.)

NESDIS - National Environmental Satellite Data and Information Service

NHC - National Hurricane Center (NWS)

NMC - National Meteorological Center (NWS)

NOAA - National Oceanic and Atmospheric Administration - (Department of Commerce)

NOTAM - Notice to Airmen

NSSFC - National Severe Storms Forecast Center (NWS)

NWS - National Weather Service (in the National Oceanic and Atmospheric Administration of the Department of Commerce)

PATWAS - Pilot's Automatic Telephone Weather Answering Service (a self briefing service)

PIREP - Pilot Weather Report

QICP - Qualified Internet Communications Provider

RAREP - Radar Weather Report

SA - Surface Aviation Weather Report (a message identifier)

SAWRS - Supplemental Aviation Weather Reporting Station (usually an airline office at a terminal not having NWS or FAA facilities)

SFSS - Satellite Field Service Station

SIGMET - Significant Meteorological Information (including an inflight advisory forecast of weather; potentially hazardous to all aircraft)

FYI: Convective SIGMETS describe conditions that are potentially hazardous to all aircraft and imply severe or greater turbulence and icing, and/or low altitude windshear. Convective SIGMETS are issued in the conterminous U.S. for severe thunderstorms with surface winds of 50 knots or more, 3/4 inch hail, and possible tornadoes. They are also issued for embedded thunderstorms, lines of thunderstorms, and thunderstorms with widespread coverage that are VIP level 4 or greater.

TAF - Terminal Aviation Forecast (identifies a terminal forecast in the ICAO code)

TWEB - Transcribed Weather Broadcast (a self briefing radio broadcast service)

UA - Pilot Report (PIREP) (a message identifier)

VIP – Video Inegrator and Processor

WA - AIRMET valid for a specified period (a message identifier)

WS - SIGMET valid for a specified period (a message identifier)

WSFO - Weather Service Forecast Office (NWS)

WSO - Weather Service Office (NWS)

WST - Convective SIGMET (a message identifier)

WW - Severe Weather Watch (identifies a forecast of probable severe thunderstorms or tornadoes)

C. ICAO Equivalent Terminology. ICAO meteorological terms and acronyms differ from terms commonly used in the United States. A complete list of ICAO terminology can be found in "Meteorological Service for International Air Navigation" Annex 3 (ICAO) and "Manual of Aeronautical Meteorological Practice" Doc 8896-AN/893/3 (ICAO). The following list contains most of the common terms used by aircrews and dispatchers, however, it is not all inclusive:

ICAO TERM: Aerodrome Report (METAR)
EQUIVALENT U.S. TERM: Surface Aviation Weather Report

ICAO TERM: Weather Radar Report
EQUIVALENT U.S. TERM: Radar Weather Reports and Radar Summary Charts

ICAO TERM: Aircraft Reports (AIREP)
EQUIVALENT U.S. TERM: Pilot Reports (PIREP)

ICAO TERM: Aerodrome Forecasts (TAF)
EQUIVALENT U.S. TERM: Terminal Forecasts (FT)

ICAO TERM: Area Forecast for Aviation
EQUIVALENT U.S. TERM: Aviation Area Forecast (FA)

ICAO TERM: Route Forecast for Aviation (ROFOR)
EQUIVALENT U.S. TERM: TWEB Route Forecast and Synopsis

ICAO TERM: Forecast Upper Winds and Temperatures
EQUIVALENT U.S. TERM: Winds and Temperatures Aloft Forecast (FD)

ICAO TERM: SIGMET Information and Aerodrome Warnings
EQUIVALENT U.S. TERM: Inflight Advisories (WST, WS, WA and local airport advisories)

1414-1416. RESEREVED

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